

## ABSTRACT

5 The present invention provides methods for isolating biological target materials, particularly nucleic acids, such as DNA or RNA or hybrid molecules of DNA and RNA, from other substances in a medium using silica magnetic particles. The methods of the present invention involve forming a complex of the silica magnetic particles and the biological target material in a mixture of the medium and particles, separating the complex from the mixture using external magnetic force, and eluting the biological target material from the complex. The preferred embodiments of magnetic silica particles used in the methods and kits of the present invention are capable of forming a complex with at least 2  $\mu\text{g}$  of biological target material per milligram of particle, and of releasing at least 60% of the material from the complex in the elution step of the method. The methods of the present invention produce isolated biological target material which is substantially free of contaminants, such as metals or macromolecular substances, which can interfere with further processing or analysis, if present.

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